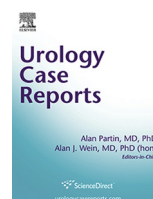


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Trauma and Reconstruction

A Rare Cause of Death in a Woman: Iatrogenic Bladder Rupture in a Patient With an Indwelling Foley Catheter

Anthea B. Mahesan Paul^{a,b,*}, Lary Simms^b, Abraham E. Paul^{a,b}, Andrew A. Mahesan^c, Ammani Ramzanali^a^a Spartan Health Sciences University, School of Medicine, Vieux-Fort, Saint Lucia^b Clark County Coroners Office, 1704 Pinto Lane, Las Vegas, NV 89106, USA^c Ross University, School of Medicine, Dominica

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ABSTRACT

The CDC estimates that 12–25% of all hospitalized patients receive a urinary catheter during their hospital stay. Foley catheter failure is uncommon and Foley catheter failure associated with iatrogenic urinary bladder rupture (IUBR) is extremely rare. Symptoms are often nonspecific and thus misdiagnosis and delayed treatment is common. In this case report, we present a case of IUBR in a woman from Foley catheter failure, which ultimately led to her demise. This case adds to the literature the importance of suspicion for IUBR in patients with indwelling Foley catheters presenting with lower abdominal pain, hematuria, and decreased urine output.

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Introduction

Urinary bladder rupture is rare with the incidence reported to be between 0.0007% (1/126,000) and 0.002% (15/734,260) of all hospital admissions.¹ This condition often goes unrecognized due to the array of nonspecific symptoms. This in turn delays diagnosis and as a result urinary bladder rupture is associated with high morbidity and mortality rate of approximately 50%.² Early diagnosis of this condition is essential as it has a significant impact on survival as well as morbidity. In this case we present an unusual fatal case of iatrogenic bladder rupture in a 68-year-old female patient associated with indwelling Foley catheter failure.

The case

A 68-year-old Caucasian female presented to the ER with complaint of shortness of breath. As she had a recent past history of abdominal surgery for ruptured appendicitis requiring colostomy placement, sepsis was suspected. She was given a Foley catheter and admitted in the ICU under the sepsis protocol.

Laboratory values at admission were hemoglobin 9.2 g/dL, hematocrit of 30.4%, leukocyte count of 20,000/mm³, platelet count of 137,000/mm³, sodium of 137 mEq/L, potassium of 3.9 mEq/L, and normal renal function. She also had history of hypertension, hypothyroidism, dyslipidemia, coronary artery disease, peripheral vascular disease status post aortobifemoral bypass surgery, and COPD. In the ICU she received broad-spectrum antibiotics and continued her usual medications including Amiodarone, Aspirin, Heparin, Lasix, Oxycodone, Pepcid, B12, Pravachol, Synthroid, and Xanax. Nine days after admission the patient began to complain of dull lower abdominal pain, gradually increasing in severity. On the 10th day after admission the lower abdominal pain became severe and was accompanied with decreased urine output. The Foley catheter was replaced and within half an hour of catheter replacement, flow was characterized as gross blood. Laboratory testing revealed a decrease in hemoglobin, now 6.9 g/dL. A contrast-enhanced computed tomography (CT) scan of her abdomen and pelvis detected free peritoneal fluid, fluid around the bladder and left rectus sheath hematoma with active extravasation. This was confirmed by CT cystogram which showed bladder rupture with fluid extending superiorly from the bladder dome (Figs. 1 and 2).

At around this time the patient deteriorated and went into hypovolemic shock due to blood loss. Subsequent medical and surgical decision making included blood transfusion, vasopressor support and preparation for transfer to another hospital for

* Corresponding author. Spartan Health Sciences University, School of Medicine, CHARCOS, P.O. Box 324, Vieux-Fort, Saint Lucia, West Indies.

E-mail address: abm.paul@hotmail.com (A.B.M. Paul).

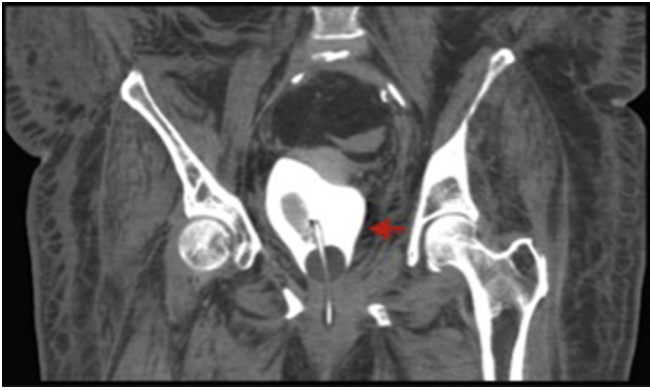


Figure 1. CT cystogram coronal view: displays ruptured decompressed urinary bladder with Foley catheter *in situ*.

surgical intervention. Unfortunately the patient expired before the transfer.

Autopsy confirmed bladder rupture and found extensive pelvic soft tissue hemorrhage, hematoma and pale internal organs indicative of acute blood loss. Aspiration of the urinary bladder prior to dissection demonstrated gross blood. The soft tissue adjacent to the bladder on the left side with extension into the anterior abdominal wall demonstrated dense hemorrhage associated with a 3.0 inch hematoma containing 250 g of clot (Fig. 3). The dome of the bladder and the retroperitoneal soft tissue with extension into the small bowel mesentery demonstrated diffuse hemorrhage. Dissection of the urinary bladder, proximal urethra and bladder trigone showed broad areas of mucosal hemorrhage associated with a rent in the left anterolateral area contiguous with the previously described hematoma of the wall of the dome. The bladder was thin and the trigone was grossly unremarkable. Microscopic findings revealed hemorrhage admixed with fibrin in sections of the pelvic and perivesical soft tissue.

The cause of death in this 68-year-old female was as a result of acute blood loss due to indwelling Foley catheter failure leading to acute urinary bladder distension and ultimately urinary bladder rupture. The patient also had significant coronary

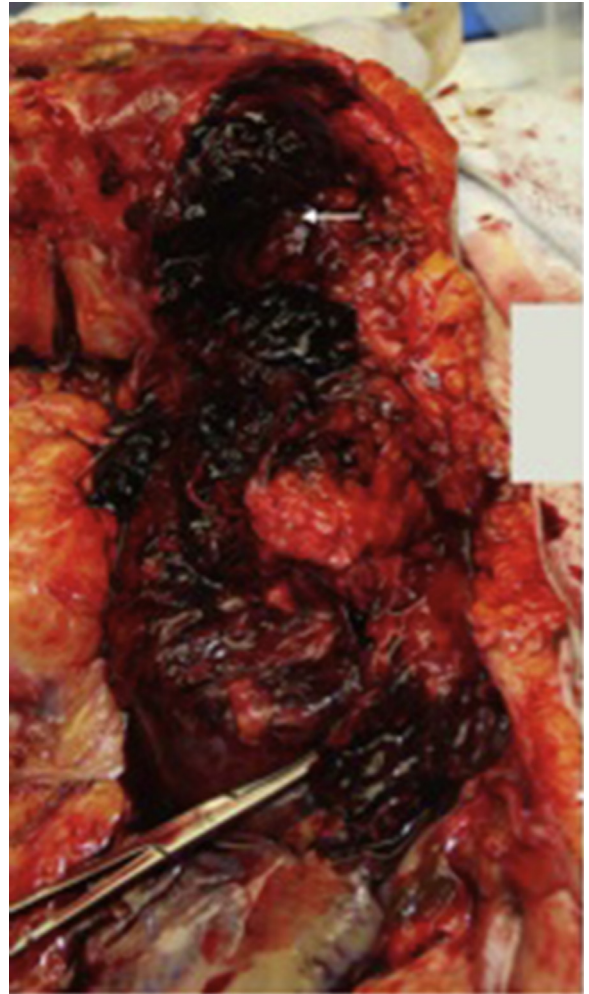


Figure 3. Displays the soft tissue adjacent to the bladder on the left side with extension into the anterior abdominal wall which demonstrated dense hemorrhage associated with a 3.0 inch hematoma containing 250 g of clot.

artery disease and chronic obstructive pulmonary disease that may have reduced the cardiorespiratory physiological reserve and would have made it difficult for her to recuperate after significant blood loss.

Discussion

Urinary bladder rupture in the literature has been associated with numerous causes ranging from carcinoma to substance abuse. Predisposing factors that weaken the normal architecture and elasticity of the urinary bladder may lead to rupture. Other complications associated with long-term urethral catheter use include urinary tract infection, iatrogenic hypospadias, obstruction, urinary tract stones, local periurinary infections, and chronic pyelonephritis.³

Urinary bladder rupture presents with a myriad of nonspecific symptoms. This often leads to misdiagnosis or significant delay in diagnosis, leading to an increase in morbidity and mortality. In our case, our patient developed severe abdominal pain, and a reduction in urine output before urethral catheter replacement, therefore we suspect that the urinary bladder injury occurred before exchange of the original Foley catheter. Common symptoms of urinary bladder rupture include diffuse

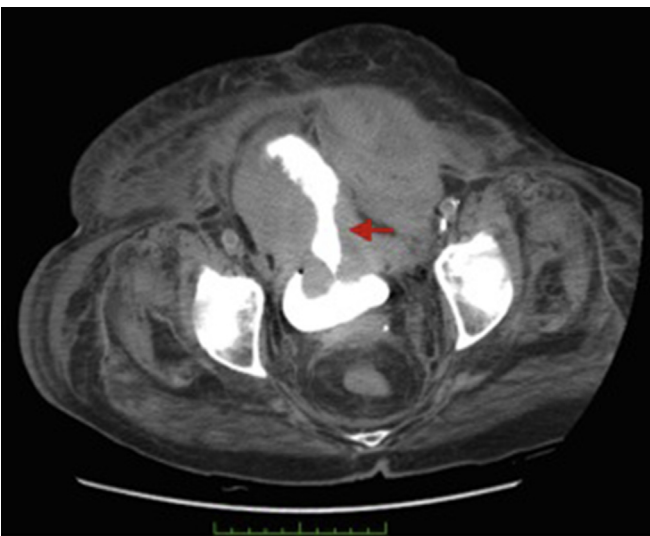


Figure 2. CT cystogram axial view: displays leak of contrast fluid extending superiorly from the urinary bladder dome.

suprapubic pain and tenderness, evidence of shock, hematuria and oliguria. Diagnostically computed tomography cystography or contrast-enhanced CT with delayed imaging has shown to be the most effective modality for detecting urinary bladder rupture.⁴

Conclusion

Urinary bladder rupture has high mortality rates due to the nonspecific symptoms, delay in diagnosis and rapid evolution. Such cases are surgical emergencies and without prompt intervention, prognosis is poor. Our case is an example of how the delay in diagnosis may lead to the untimely demise of a patient with urinary bladder rupture. It also adds to the literature the importance of astute clinical suspicion in patients with Foley catheters who complain of severe abdominal pain accompanied with decreased urine output. The CDC estimates that 12–25% of all hospitalized patients receive a urinary catheter during their hospital stay.⁵ Therefore, clinicians should be aware of this potential complication as well as other long-term urethral catheter related complications.

Consent

Written informed consent was obtained. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript.

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